

=====

Sequence Listing was accepted with existing errors.

See attached Validation Report.

If you need help call the Patent Electronic Business Center at (866)
217-9197 (toll free).

Reviewer: Anne Corrigan

Timestamp: Tue Aug 14 11:48:20 EDT 2007

=====

Application No:10583089

Version No:1.1

Input Set:

Output Set:

Started:2007-08-14 11:47:24.481

Finished:2007-08-14 11:47:25.386

Elapsed:0 hr(s) 0 min(s) 0 sec(s) 905 ms

Total Warnings:0

Total Errors:1

No. of SeqIDs Defined:44

Actual SeqID Count:44

Error code	Error Description
E 257	Invalid sequence data feature in <221> in SEQ ID (23)

SEQUENCE LISTING

<110> FIEBIG, HELMUT
NANDY, ANDREAS
CROMWELL, OLIVER

<120> DNA SEQUENCE, AND RECOMBINANT PREPARATION OF GROUP 4
MAJOR ALLERGENS FROM CEREALS

<130> MERCK-3178

<140> 10/583,089
<141> 2006-06-15

<150> PCT/EP04/013664
<151> 2004-12-01

<150> DE 10359351.9
<151> 2003-12-16

<160> 44

<170> PatentIn Ver. 3.3

<210> 1
<211> 1603
<212> DNA
<213> Secale cereale

<220>
<221> CDS
<222> (1)..(1557)

<400> 1
aac tat agg gcc ttc gcg ctg gcg ctc ctc ttc tgc gcc ttg tcc tgc 48
Asn Tyr Arg Ala Phe Ala Leu Ala Leu Leu Phe Cys Ala Leu Ser Cys
1 5 10 15

caa gcc gcc gcg gcc gcc tac gcg ccc gtg cct gcc aag gcg gac ttc 96
Gln Ala Ala Ala Ala Ala Tyr Ala Pro Val Pro Ala Lys Ala Asp Phe
20 25 30

ctc gga tgc ctc atg aag gag ata ccg gcc cgc ctc ctc tac gcc aag 144
Leu Gly Cys Leu Met Lys Glu Ile Pro Ala Arg Leu Leu Tyr Ala Lys
35 40 45

agc tcg cct gac tac ccc acc gtg ctg gcg cag acc atc agg aac tcg 192
Ser Ser Pro Asp Tyr Pro Thr Val Leu Ala Gln Thr Ile Arg Asn Ser
50 55 60

cgg tgg tcg tcg ccg cag aac gtg aag ccg atc tac atc atc acc ccc 240
Arg Trp Ser Ser Pro Gln Asn Val Lys Pro Ile Tyr Ile Ile Thr Pro
65 70 75 80

acc aac gcc tcg cac atc cag tcc gcg gtg gtg tgc ggc cgc cgg cac 288
Thr Asn Ala Ser His Ile Gln Ser Ala Val Val Cys Gly Arg Arg His
85 90 95

ggc atc cgc ctc cgc gtg cgg agc ggc ggc cac gac tac gag ggc ctg	336
Gly Ile Arg Leu Arg Val Arg Ser Gly Gly His Asp Tyr Glu Gly Leu	
100 105 110	
tcg tac cgg tct gag aaa ccc gag acg ttc gcc gtc gtc gac ctc aac	384
Ser Tyr Arg Ser Glu Lys Pro Glu Thr Phe Ala Val Val Asp Leu Asn	
115 120 125	
aag atg cgg gca gtg tcg gtc gac ggc tac gcc cgc acg gcg tgg gtc	432
Lys Met Arg Ala Val Ser Val Asp Gly Tyr Ala Arg Thr Ala Trp Val	
130 135 140	
gaa tcc ggc gcg cag ctc ggc gag ctc tac tac gcg atc gcc aag aac	480
Glu Ser Gly Ala Gln Leu Gly Glu Leu Tyr Tyr Ala Ile Ala Lys Asn	
145 150 155 160	
agc ccc gtg ctc gcg ttc ccg gct ggc gtc tgc ccg tcc atc ggc gtc	528
Ser Pro Val Leu Ala Phe Pro Ala Gly Val Cys Pro Ser Ile Gly Val	
165 170 175	
ggc ggc aac ttc gca ggc ggc ggc ttt ggc atg ctg ctg cgc aag tac	576
Gly Gly Asn Phe Ala Gly Gly Gly Phe Gly Met Leu Leu Arg Lys Tyr	
180 185 190	
ggc atc gcc gct gag aac gtc atc gac gtc aag gtg gtc gac ccc aac	624
Gly Ile Ala Ala Glu Asn Val Ile Asp Val Lys Val Val Asp Pro Asn	
195 200 205	
ggc aag ctg ctc gac aag agc tcc atg agc gcg gac cac ttc tgg gcc	672
Gly Lys Leu Leu Asp Lys Ser Ser Met Ser Ala Asp His Phe Trp Ala	
210 215 220	
gtt agg ggc ggc ggc gga gag agc ttt ggc atc gtc gtc tcg tgg cag	720
Val Arg Gly Gly Gly Gly Glu Ser Phe Gly Ile Val Val Ser Trp Gln	
225 230 235 240	
gtg aag ctc ctg ccg gtg cct ccc acc gtg acc gtg ctc aag atc ccc	768
Val Lys Leu Leu Pro Val Pro Pro Thr Val Thr Val Leu Lys Ile Pro	
245 250 255	
aag acg gtg caa gaa ggc gcc ata gac ctc gtc aac aag tgg cag ctg	816
Lys Thr Val Gln Glu Gly Ala Ile Asp Leu Val Asn Lys Trp Gln Leu	
260 265 270	
gtc ggg ccg gca ctt ccc ggc gac ctc atg atc cgc atc atc ctt gcc	864
Val Gly Pro Ala Leu Pro Gly Asp Leu Met Ile Arg Ile Ile Leu Ala	
275 280 285	
ggg aac agc gcg acg ttc gag gcc atg tac ctg ggc acc tgc agt acc	912
Gly Asn Ser Ala Thr Phe Glu Ala Met Tyr Leu Gly Thr Cys Ser Thr	
290 295 300	
ctg acg ccg ctg atg agc agc aaa ttc ccc gag ctt ggc atg aac ccc	960
Leu Thr Pro Leu Met Ser Ser Lys Phe Pro Glu Leu Gly Met Asn Pro	
305 310 315 320	

tcg cac tgc aac gag atg tcc tgg atc aag tcc atc ccc ttc atc cac	1008
Ser His Cys Asn Glu Met Ser Trp Ile Lys Ser Ile Pro Phe Ile His	
325 330 335	
ctc ggc aag cag aac ctc gac gac ctc ctc aac cgg aac aac acc ttc	1056
Leu Gly Lys Gln Asn Leu Asp Asp Leu Leu Asn Arg Asn Asn Thr Phe	
340 345 350	
aaa cca ttc gcc gaa tac aag tcg gac tac gtg tac cag ccc ttc ccc	1104
Lys Pro Phe Ala Glu Tyr Lys Ser Asp Tyr Val Tyr Gln Pro Phe Pro	
355 360 365	
aag ccc gtg tgg gag cag atc ttc ggc tgg ctt gtg aag ccc ggc gcg	1152
Lys Pro Val Trp Glu Gln Ile Phe Gly Trp Leu Val Lys Pro Gly Ala	
370 375 380	
ggg atc atg atc atg gac ccc tat ggc gcc acc atc agc gct acc ccc	1200
Gly Ile Met Ile Met Asp Pro Tyr Gly Ala Thr Ile Ser Ala Thr Pro	
385 390 395 400	
gaa gcg gcg acg ccg ttc cct cac cgc cag ggc gtc ctc ttc aac atc	1248
Glu Ala Ala Thr Pro Phe Pro His Arg Gln Gly Val Leu Phe Asn Ile	
405 410 415	
cag tac gtc aac tac tgg ttc gct gag tca gcc ggc gcg gcg ccg ctg	1296
Gln Tyr Val Asn Tyr Trp Phe Ala Glu Ser Ala Gly Ala Ala Pro Leu	
420 425 430	
cag tgg agc aag gac ata tac aag ttc atg gag ccg tac gtg agc aaa	1344
Gln Trp Ser Lys Asp Ile Tyr Lys Phe Met Glu Pro Tyr Val Ser Lys	
435 440 445	
aat ccc agg cag gcg tat gcc aac tac agg gac atc gac ctt ggc agg	1392
Asn Pro Arg Gln Ala Tyr Ala Asn Tyr Arg Asp Ile Asp Leu Gly Arg	
450 455 460	
aat gag gtg gtg aac gac atc tcc acc tac agc agc ggc aaa gtg tgg	1440
Asn Glu Val Val Asn Asp Ile Ser Thr Tyr Ser Ser Gly Lys Val Trp	
465 470 475 480	
ggt gag aag tac ttc aag ggc aac ttc caa agg ctc gcc att acc aag	1488
Gly Glu Lys Tyr Phe Lys Gly Asn Phe Gln Arg Leu Ala Ile Thr Lys	
485 490 495	
ggc aag gtg gat cct cag gac tac ttc agg aac gag cag agc atc ccg	1536
Gly Lys Val Asp Pro Gln Asp Tyr Phe Arg Asn Glu Gln Ser Ile Pro	
500 505 510	
cca ctg gtc gag aag tac tga tcgaggacct tgcattggaaa tttagtgcgt	1587
Pro Leu Val Glu Lys Tyr	
515	
ggttggcggtt tcacat	1603

<210> 2

<211> 518

<212> PRT

<213> Secale cereale

<400> 2

Asn	Tyr	Arg	Ala	Phe	Ala	Leu	Ala	Leu	Leu	Phe	Cys	Ala	Leu	Ser	Cys
1				5					10					15	

Gln	Ala	Ala	Ala	Ala	Ala	Tyr	Ala	Pro	Val	Pro	Ala	Lys	Ala	Asp	Phe
			20					25					30		

Leu	Gly	Cys	Leu	Met	Lys	Glu	Ile	Pro	Ala	Arg	Leu	Leu	Tyr	Ala	Lys
		35					40					45			

Ser	Ser	Pro	Asp	Tyr	Pro	Thr	Val	Leu	Ala	Gln	Thr	Ile	Arg	Asn	Ser
	50					55					60				

Arg	Trp	Ser	Ser	Pro	Gln	Asn	Val	Lys	Pro	Ile	Tyr	Ile	Ile	Thr	Pro
65					70				75						80

Thr	Asn	Ala	Ser	His	Ile	Gln	Ser	Ala	Val	Val	Cys	Gly	Arg	Arg	His
				85					90					95	

Gly	Ile	Arg	Leu	Arg	Val	Arg	Ser	Gly	Gly	His	Asp	Tyr	Glu	Gly	Leu
			100					105					110		

Ser	Tyr	Arg	Ser	Glu	Lys	Pro	Glu	Thr	Phe	Ala	Val	Val	Asp	Leu	Asn
		115					120					125			

Lys	Met	Arg	Ala	Val	Ser	Val	Asp	Gly	Tyr	Ala	Arg	Thr	Ala	Trp	Val
	130					135					140				

Glu	Ser	Gly	Ala	Gln	Leu	Gly	Glu	Leu	Tyr	Tyr	Ala	Ile	Ala	Lys	Asn
145					150					155					160

Ser	Pro	Val	Leu	Ala	Phe	Pro	Ala	Gly	Val	Cys	Pro	Ser	Ile	Gly	Val
				165					170					175	

Gly	Gly	Asn	Phe	Ala	Gly	Gly	Gly	Phe	Gly	Met	Leu	Leu	Arg	Lys	Tyr
			180					185						190	

Gly	Ile	Ala	Ala	Glu	Asn	Val	Ile	Asp	Val	Lys	Val	Val	Asp	Pro	Asn
		195					200					205			

Gly	Lys	Leu	Leu	Asp	Lys	Ser	Ser	Met	Ser	Ala	Asp	His	Phe	Trp	Ala
	210					215					220				

Val	Arg	Gly	Gly	Gly	Gly	Glu	Ser	Phe	Gly	Ile	Val	Val	Ser	Trp	Gln
225					230					235					240

Val	Lys	Leu	Leu	Pro	Val	Pro	Pro	Thr	Val	Thr	Val	Leu	Lys	Ile	Pro
				245				250						255	

Lys	Thr	Val	Gln	Glu	Gly	Ala	Ile	Asp	Leu	Val	Asn	Lys	Trp	Gln	Leu
			260					265					270		

Val	Gly	Pro	Ala	Leu	Pro	Gly	Asp	Leu	Met	Ile	Arg	Ile	Ile	Leu	Ala
		275					280						285		

Gly Asn Ser Ala Thr Phe Glu Ala Met Tyr Leu Gly Thr Cys Ser Thr
290 295 300

Leu Thr Pro Leu Met Ser Ser Lys Phe Pro Glu Leu Gly Met Asn Pro
305 310 315 320

Ser His Cys Asn Glu Met Ser Trp Ile Lys Ser Ile Pro Phe Ile His
325 330 335

Leu Gly Lys Gln Asn Leu Asp Asp Leu Leu Asn Arg Asn Asn Thr Phe
340 345 350

Lys Pro Phe Ala Glu Tyr Lys Ser Asp Tyr Val Tyr Gln Pro Phe Pro
355 360 365

Lys Pro Val Trp Glu Gln Ile Phe Gly Trp Leu Val Lys Pro Gly Ala
370 375 380

Gly Ile Met Ile Met Asp Pro Tyr Gly Ala Thr Ile Ser Ala Thr Pro
385 390 395 400

Glu Ala Ala Thr Pro Phe Pro His Arg Gln Gly Val Leu Phe Asn Ile
405 410 415

Gln Tyr Val Asn Tyr Trp Phe Ala Glu Ser Ala Gly Ala Ala Pro Leu
420 425 430

Gln Trp Ser Lys Asp Ile Tyr Lys Phe Met Glu Pro Tyr Val Ser Lys
435 440 445

Asn Pro Arg Gln Ala Tyr Ala Asn Tyr Arg Asp Ile Asp Leu Gly Arg
450 455 460

Asn Glu Val Val Asn Asp Ile Ser Thr Tyr Ser Ser Gly Lys Val Trp
465 470 475 480

Gly Glu Lys Tyr Phe Lys Gly Asn Phe Gln Arg Leu Ala Ile Thr Lys
485 490 495

Gly Lys Val Asp Pro Gln Asp Tyr Phe Arg Asn Glu Gln Ser Ile Pro
500 505 510

Pro Leu Val Glu Lys Tyr
515

<210> 3
<211> 1644
<212> DNA
<213> Secale cereale

<220>
<221> CDS
<222> (1) .. (1563)

```

<400> 3
aac tcg agg gcc ttt gct ctg gtg ccc ctc ctc atc tgc gtc ttg tcc 48
Asn Ser Arg Ala Phe Ala Leu Val Pro Leu Leu Ile Cys Val Leu Ser
  1           5           10           15

tgc cac gcc gcc gtc tcc tac gcg gcg gcg ccg gtg ccg gcc aag gag 96
Cys His Ala Ala Val Ser Tyr Ala Ala Ala Pro Val Pro Ala Lys Glu
          20           25           30

gac ttc ttc gga tgc ctg gtg aag gag ata ccg gcc cgc ctc ctc tac 144
Asp Phe Phe Gly Cys Leu Val Lys Glu Ile Pro Ala Arg Leu Leu Tyr
          35           40           45

gcc aag agc tcg cct gcc ttc ccc acc gtc ctg gcg cag acc atc agg 192
Ala Lys Ser Ser Pro Ala Phe Pro Thr Val Leu Ala Gln Thr Ile Arg
          50           55           60

aac tcg cgg tgg tcg tcg ccg cag agc gtg aag ccg ctc tac atc atc 240
Asn Ser Arg Trp Ser Ser Pro Gln Ser Val Lys Pro Leu Tyr Ile Ile
          65           70           75           80

acc ccc acc aac gcc tcc cac atc cag tcc gcg gtg gtg tgc ggc cgc 288
Thr Pro Thr Asn Ala Ser His Ile Gln Ser Ala Val Val Cys Gly Arg
          85           90           95

cgg cac ggc gtc cgc atc cgc gtg cgg agc ggc ggc cac gac tac gag 336
Arg His Gly Val Arg Ile Arg Val Arg Ser Gly Gly His Asp Tyr Glu
          100           105           110

ggc ctg tcg tac cgg tcc gag cgc ccc gag gcg ttc gcc gtc gtc gac 384
Gly Leu Ser Tyr Arg Ser Glu Arg Pro Glu Ala Phe Ala Val Val Asp
          115           120           125

ctc aac aag atg cgg gcc gtg gtg gtc gac ggc aag gct cgc acg gcg 432
Leu Asn Lys Met Arg Ala Val Val Val Asp Gly Lys Ala Arg Thr Ala
          130           135           140

tgg gtg gac tcc ggt gcg cag ctc ggc gag ctc tac tac gcc atc gcc 480
Trp Val Asp Ser Gly Ala Gln Leu Gly Glu Leu Tyr Tyr Ala Ile Ala
          145           150           155           160

aag aac agc ccc gtg ctc gcg ttc ccg gcc ggc gtt tgc ccg acc att 528
Lys Asn Ser Pro Val Leu Ala Phe Pro Ala Gly Val Cys Pro Thr Ile
          165           170           175

ggt gta ggc ggc aac ttc gct ggc ggc ggc ttc ggc atg ctg ctg cgc 576
Gly Val Gly Gly Asn Phe Ala Gly Gly Gly Phe Gly Met Leu Leu Arg
          180           185           190

aag tac ggc atc gcc gcc gag aac gtc atc gac gtg aag gtg gtc gac 624
Lys Tyr Gly Ile Ala Ala Glu Asn Val Ile Asp Val Lys Val Val Asp
          195           200           205

gcc aac ggc aca ctg ctc gac aag agc tcc atg agc gcg gat cac ttc 672
Ala Asn Gly Thr Leu Leu Asp Lys Ser Ser Met Ser Ala Asp His Phe
          210           215           220

```


tgg gcc gtc agg ggc ggc ggc gga gag agc ttc ggc atc gtc gtg tcg	720
Trp Ala Val Arg Gly Gly Gly Gly Glu Ser Phe Gly Ile Val Val Ser	
225 230 235 240	
tgg cag gtg aag ctc ctc ccg gtg cct ccc acc gtg acc gtg ttc aag	768
Trp Gln Val Lys Leu Leu Pro Val Pro Pro Thr Val Thr Val Phe Lys	
245 250 255	
atc ccc aag acg gtg caa gaa ggc gcc gta gag ctc atc aac aag tgg	816
Ile Pro Lys Thr Val Gln Glu Gly Ala Val Glu Leu Ile Asn Lys Trp	
260 265 270	
cag cta gtc gcg ccg gcc ctc ccc gac gac ctg atg atc cgc atc atc	864
Gln Leu Val Ala Pro Ala Leu Pro Asp Asp Leu Met Ile Arg Ile Ile	
275 280 285	
gct ttc ggc ggc acc gcc aag ttc gag gcc atg tac ctg ggc acc tgc	912
Ala Phe Gly Gly Thr Ala Lys Phe Glu Ala Met Tyr Leu Gly Thr Cys	
290 295 300	
aaa gcc ctg aca ccg ctg atg agc agc aga ttc ccc gag ctc ggc atg	960
Lys Ala Leu Thr Pro Leu Met Ser Ser Arg Phe Pro Glu Leu Gly Met	
305 310 315 320	
aac gcc tcg cac tgc aac gag atg ccc tgg atc aag tcc gtc cca ttc	1008
Asn Ala Ser His Cys Asn Glu Met Pro Trp Ile Lys Ser Val Pro Phe	
325 330 335	
atc cac ctt ggc aag cag gcc acc ctc tcc gac ctc ctc aac cgg aac	1056
Ile His Leu Gly Lys Gln Ala Thr Leu Ser Asp Leu Leu Asn Arg Asn	
340 345 350	
aac acc ttc aaa ccc ttc gcc gag tac aag tcg gac tac gtc tac cag	1104
Asn Thr Phe Lys Pro Phe Ala Glu Tyr Lys Ser Asp Tyr Val Tyr Gln	
355 360 365	
ccc gtc ccc aag ccc gtc tgg gcg cag atc ttc gtc tgg ctc gtc aaa	1152
Pro Val Pro Lys Pro Val Trp Ala Gln Ile Phe Val Trp Leu Val Lys	
370 375 380	
ccc ggc gcc ggg atc atg gtc atg gac ccc tac ggc gcc gcc atc agc	1200
Pro Gly Ala Gly Ile Met Val Met Asp Pro Tyr Gly Ala Ala Ile Ser	
385 390 395 400	
gcc acc ccc gaa gcc gcc acg ccg ttc cct cac cgc aag gac gtc ctc	1248
Ala Thr Pro Glu Ala Ala Thr Pro Phe Pro His Arg Lys Asp Val Leu	
405 410 415	
ttc aac atc cag tac gtc aac tac tgg ttc gac gag gca ggc ggc gcc	1296
Phe Asn Ile Gln Tyr Val Asn Tyr Trp Phe Asp Glu Ala Gly Gly Ala	
420 425 430	
gcg ccg ctg cag tgg agc aag gac atg tac agg ttc atg gag ccg tac	1344
Ala Pro Leu Gln Trp Ser Lys Asp Met Tyr Arg Phe Met Glu Pro Tyr	
435 440 445	